

Application No. 10/825,522
Amendment dated November 12, 2009
Reply to Final Office Action of September 1, 2009

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for inserting a plurality of spinal fusion implants across a disc space between two adjacent vertebral bodies of a spine, said method comprising:

providing the plurality of implants each comprising opposite threaded arcuate portions adapted for placement toward and at least in part within the adjacent vertebral bodies and having a distance therebetween defining an implant height greater than the normal height of the disc space to be fused, at least a first of the plurality of implants having a leading end, a trailing end, a length from the leading end to the trailing end and a mid-longitudinal axis along the length, a hollow interior, and at least a medial side along the mid-longitudinal axis configured for placement in close proximity to a second of the plurality of implants, each of the arcuate portions and the medial side of the first of the implants having at least one opening in communication with the hollow interior, the opening of the medial side ~~having a dimension greater than one-half~~ extending along a majority of the length of the implant;

Introducing osteogenic material through the opening of the medial side;

forming a first bore across the disc space by removing arc shaped portions from each of the vertebral bodies adjacent the disc space, the first bore having a mid-longitudinal axis;

forming a second bore across the disc space by removing arc shaped portions from each of the vertebral bodies adjacent the disc space, the second bore having a mid-longitudinal axis, at least a portion of the second bore overlapping the first bore, the mid-longitudinal axes of the first and second bores being convergent to one another;

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inserting with at least an element of rotation the first implant into the first bore with the medial side and the opening in the medial side being oriented facing the interior of the disc space when the first implant is in a final installed position; and

inserting with at least an element of rotation the second implant having a medial side and an opposite lateral side into the second bore, the medial side of the second implant having an opening, the second implant being adjacent to and in close proximity to the medial side of the first implant, the openings of the medial sides of the first and second implants being in communication with each other.

2. (previously presented) The method of claim 1, wherein said forming a first bore and said forming a second bore includes forming a bore having a diameter generally corresponding to a root diameter proximate the leading end of each of the first and second implants.
3. (previously presented) The method of claim 1, further comprising pre-tapping the first and second bores prior to inserting the first and second implants.
4. (previously presented) The method of claim 1, wherein said inserting the first and second implants includes positioning the first and second implants at an angle toward each other within the first and second bores such that the combined width of the first and second implants at their leading ends will be less than the combined width of the first and second implants at their trailing ends.
5. (previously presented) The method of claim 1, wherein said inserting the first and second implants includes rotating the first and second implants such that when fully inserted, the first and second implants will come to rest so that the trailing end of each of the first and second implants will be correctly rotationally aligned so that the profile of the trailing end will correspond to the contour of the anterior aspect of the vertebral bodies.
6. (currently amended) A method for inserting a plurality of spinal fusion implants across a disc space between two adjacent vertebral bodies of a spine, said method comprising:

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providing a first of the plurality of implants having the form of a threaded partial cylinder with a leading end, a trailing end, a length from the leading end to the trailing end and a mid-longitudinal axis along the length, the first implant having opposite arcuate portions adapted for placement toward and at least in part within the adjacent vertebral bodies, a medial side, a lateral side, and a hollow interior, the medial side having a portion extending from one of the opposite arcuate portions to another of the opposite arcuate portions, the portion of the medial side being concave in a direction facing away from the lateral side, each of the opposite arcuate portions and the medial side of the first implant having at least one opening in communication with the hollow interior, the opening of the medial side ~~having a dimension greater than one-half~~ extending along a majority of the length of the implant;

introducing osteogenic material through the opening of the medial side;

providing a second of the plurality of implants having the form of a threaded cylinder with a leading end, a trailing end, and a mid-longitudinal axis therebetween, and at least a medial side along the mid-longitudinal axis including an opening, wherein the largest diameter of the partial cylinder of the first implant and the diameter of the cylinder of the second implant are each larger than the disc space between the two adjacent vertebral bodies;

forming first and second partially overlapping cylindrical holes across the disc space between the two adjacent vertebral bodies;

threading the first implant into the first of the overlapping cylindrical holes, the concave portion of the medial side of the first implant being oriented such that the concave portion will substantially lie on an arc defined by the radius of the second cylindrical hole adjacent thereto, the opening of the medial side being oriented facing the interior of the disc space; and

threading the second implant into the second of the overlapping holes with the second implant in close proximity to the concave portion of the first implant and the openings of the medial sides of the first and second implants being in communication with each other.

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7. (previously presented) The method of claim 6, wherein said forming a first and second partially overlapping cylindrical holes includes forming a bore having a diameter generally corresponding to a root diameter proximate the leading end of each of the first and second implants.
8. (previously presented) The method of claim 6, further comprising pre-tapping the first and second bores prior to inserting the first and second implants.
9. (previously presented) The method of claim 6, wherein said threading the first implant and said threading the second implant includes positioning the first and second implants at an angle toward each other within the overlapping holes such that the combined width of the first and second implants at their leading ends will be less than the combined width of the first and second implants at their trailing ends.
10. (previously presented) The method of claim 6, wherein said threading the first implant and said threading the second implant includes rotating the first and second implants such that when threaded in fully, the first and second implants will come to rest so that the trailing end of each of the first and second implants will be correctly rotationally aligned so that the profile of the trailing end will correspond to the contour of the anterior aspect of the vertebral bodies.
11. (currently amended) A method for inserting a plurality of spinal fusion implants across a disc space between two adjacent vertebral bodies of a spine, said method comprising:
 - providing a first implant having a body in the form of a partial cylinder, the body having a leading end, a trailing end, a length from the leading end to the trailing end and a mid-longitudinal axis along the length, the body having a root diameter defined by opposite arcuate portions adapted for placement toward and at least in part within the adjacent vertebral bodies, a lateral side and a medial side opposite the lateral side connecting the opposite arcuate portions, and a hollow interior, each of the opposite arcuate portions, medial side, and lateral side having a portion of a thread extending therefrom, the medial side being concave in a direction facing away from the lateral side, each of the opposite arcuate portions

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and the medial side of the first implant having at least one opening in communication with the hollow interior, the opening of the medial side having a ~~dimension greater than one-half~~ extending along a majority of the length of the implant;

introducing osteogenic material through the opening of the medial side:

providing a second implant having a body in the form of a cylinder, the body having a leading end, a trailing end, and a mid-longitudinal axis therebetween, the body having a root diameter defined by opposite arcuate portions adapted for placement toward and at least in part within the adjacent vertebral bodies, a lateral side and a medial side opposite the lateral side connecting the opposite arcuate portions, each of the opposite arcuate portions, medial side, and lateral side having a portion of a thread extending therefrom, the medial side including an opening;

forming first and second partially overlapping cylindrical holes across the disc space between the two adjacent vertebral bodies;

threading the first implant into the first of the overlapping cylindrical holes, the concave portion of the medial side of the first implant being substantially on an arc defined by a radius of the second cylindrical hole adjacent the first hole when the first implant is in a final installed position, the opening of the medial side being oriented facing the interior of the disc space; and

threading the second implant into the second of the overlapping holes, at least a portion of the root diameter of the second implant being received within the root diameter of the first implant, the openings of the medial sides of the first and second implants being in communication with each other.

12. (previously presented) The method of claim 11, wherein said forming the first and second partially overlapping cylindrical holes includes forming a bore having a diameter generally corresponding to the root diameter proximate the leading end of each of the first and second implants.

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13. (previously presented) The method of claim 11, further comprising pre-tapping the first and second partially overlapping cylindrical holes prior to inserting the first and second implants.
14. (previously presented) The method of claim 11, wherein said threading the first implant and said threading the second implant includes positioning the first and second implants at an angle toward each other within the first and second bores such that the combined width of the first and second implants at their leading ends will be less than the combined width of the first and second implants at their trailing ends.
15. (previously presented) The method of claim 11, wherein said threading the first implant and said threading the second implant includes rotating the first and second implants such that when fully inserted, the first and second implants will come to rest so that the trailing end of each of the first and second implants will be correctly rotationally aligned so that the profile of the trailing end will correspond to the contour of the anterior aspect of the vertebral bodies.
16. (new) The method of claim 1, wherein the providing the plurality of implants includes providing the first implant with each of the arcuate portions terminating at an edge at the medial side, the opening in the medial side having a height in a plane transverse to the length of the first implant, the edges being spaced apart a distance equal to the height of the opening in the medial side.
17. (new) The method of claim 6, wherein the providing the plurality of implants includes providing the first implant with each of the arcuate portions terminating at an edge at the medial side, the opening in the medial side having a height in a plane transverse to the length of the first implant, the edges being spaced apart a distance equal to the height of the opening in the medial side.
18. (new) The method of claim 11, wherein the providing the plurality of implants includes providing the first implant with each of the arcuate portions terminating at an edge at the medial side, the opening in the medial side having a height in a plane transverse to the length of the first implant, the edges being spaced apart a distance equal to the height of the opening in the medial side.